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I CLAIM:

1. A shock absorber comprising:

first and second axially aligned cylinders each having a liquid filled piston chamber, an axially displaceable piston received in said piston chamber, and means for dampening axial displacement of said piston through said liquid in said piston chamber.

a piston rod axially extending between and into said first and second cylinder piston chambers, first and second axial ends of said piston rod being connected to said first and second cylinder pistons, respectively, and

means for securing said first and second cylinders to a body and wheel suspension of a vehicle, respectively.

2. The shock absorber of claim 1 wherein at least one of said first and second cylinders is provided with a sealed gas chamber at an end thereof distal to said piston rod, said piston and gas chambers being separated by an axially displaceable dividing piston..

3. The shock absorber of claim 2 wherein each of said at least one gas chamber is provided with a valve means for adjusting gas pressure therein.

4. The shock absorber of claim 2 wherein each of said at least one gas chamber is disposed externally of the respective said cylinder, said gas chamber being disposed in a separate gas cylinder housing said dividing piston, the respective said piston chamber communicating with said gas cylinder via a conduit at said distal end of the respective said cylinder.

5. The shock absorber of claim 1 further comprising first and second coil springs, said first coil spring being associated with said first cylinder and having a first end axially fixed with respect to said piston rod and a second end axially fixed with respect to said first cylinder, said second coil spring being associated with said second cylinder and having a first end axially fixed with respect to said piston rod and a second end axially fixed with respect to said second cylinder.

6. The shock absorber of claim 5 wherein said first and second coil spring first ends are axially fixed with respect to said piston rod by means of an annular end plate fixed to said piston rod between said first and second cylinders.

7. The shock absorber of claim 1 wherein said shock absorber further comprises a sleeve extending between said first and second cylinders, said sleeve sealingly engaging said first and second cylinders so as to define a sleeve cavity therebetween, said sleeve being telescopically displaceable with respect to at least one of said first and second cylinders to allow for relative axial displacement of said first and second cylinders.

8. The shock absorber of claim 7 wherein said sleeve is provided with a valve means for adjusting gas pressure within said sleeve cavity.

9. The shock absorber of claim 7 wherein said sleeve is axially displaceable with respect to both of said first and second cylinders.

10. The shock absorber of claim 7 wherein a first annular cavity is defined in an overlap region between said first cylinder and said sleeve, opposing axial ends of said first annular cavity being respectively defined by a first seal means fixed to said first cylinder and sealingly engaging said sleeve and a second seal means fixed to said sleeve and sealingly engaging said first cylinder.

11. The shock absorber of claim 10 wherein said first annular cavity communicates with said first piston chamber, a cross-sectional area of said first annular cavity measured in a plane perpendicular to a longitudinal axis of said piston rod being substantially equal to a cross sectional area of said piston rod.

12. The shock absorber of claim 10 wherein said first annular cavity is provided with a valve means for adjusting gas pressure therein.

13. The shock absorber of claim 10 wherein a second annular cavity is defined in an overlap region between said second cylinder and said sleeve, opposing axial ends of said second annular cavity being respectively defined by a first seal means fixed to said second cylinder and sealingly engaging said sleeve and a second seal means fixed to said sleeve and sealingly engaging said second cylinder.

Sub B5 14. The shock absorber of claim 13 wherein said second annular cavity communicates with said second piston chamber, a cross-sectional area of said second annular cavity measured in a plane perpendicular to a longitudinal axis of said piston rod direction being substantially equal to a cross sectional area of said piston rod.

15. The shock absorber of claim 13 wherein said second annular cavity is provided with a valve means for adjusting gas pressure therein.

16. The shock absorber of claim 7 further comprising first and second coil springs, said first coil spring being associated with said first cylinder and having a first end axially fixed with respect to said sleeve and a second end axially fixed with respect to said first cylinder, said second coil spring being associated with said second cylinder and having a first end axially fixed with respect to sleeve and a second end axially fixed with respect to said second cylinder.

17. The shock absorber of claim 16 wherein said first and second coil spring first ends are axially fixed with respect to said sleeve by means of an annular end plate fixed to said sleeve between said first and second cylinders.

18. In combination, a first shock absorber according to claim 10 and a second shock absorber according to claim 10, wherein said first annular cavity of said first shock absorber is filled with liquid and is operatively associated with said sleeve cavity of said second shock absorber such that a decrease/increase in the volume of said first annular cavity of said first shock absorber provides an increase/decrease in gas pressure in said sleeve cavity of said second shock absorber.

19. The combination of claim 18 wherein said first annular cavity of said first shock absorber communicates with a first end of a control cylinder and said sleeve cavity of said second shock absorber communicates with a second end of said control cylinder, a control cylinder dividing piston being disposed within said control cylinder isolating said first annular cavity of said first shock absorber and said sleeve cavity of said second shock absorber.

20. The combination of claim 19 wherein said control cylinder dividing piston is provided with a piston rod sealingly received in a reduced cross section portion of said control cylinder toward said control cylinder first end such that an extending end of said piston rod isolates said first annular cavity of said first shock absorber.

21. The combination of claim 18 wherein the first annular cavity of said second shock absorber is filled with liquid and is operatively associated with said sleeve cavity of said first shock absorber such that a decrease/increase in the volume of said first annular

cavity of said second shock absorber provides an increase/decrease in gas pressure in said sleeve cavity of said second shock absorber.

22. A shock absorber comprising:

a cylinder having a liquid filled piston chamber,

first and second axially displaceable pistons received in said piston chamber towards first and second respective ends of said cylinder,

means for dampening axial displacement of each of said first and second pistons through said liquid in said piston chamber,

a first piston rod connected to said first piston and extending through said cylinder first end,

a second piston rod connected to said second piston and extending through said cylinder second end, and

means for securing said first and second piston rods to a body and wheel suspension of a vehicle, respectively.

23. The shock absorber of claim 22 wherein said piston chamber is divided into first and second sub-chambers by a sealed gas chamber, said gas chamber being separated from said first and second piston sub-chambers by axially displaceable dividing pistons, said first and second pistons being received in said first and second piston sub-chambers, respectively.

24. The shock absorber of claim 23 wherein said gas chamber is provided with a valve means for adjusting gas pressure therein.

25. The shock absorber of claim 22 wherein said piston chamber is divided into first and second sub-chambers by a fixed seal, said first and second pistons being received in said first and second piston sub-chambers, respectively.

26. The shock absorber of claim 25 wherein said first and second sub-chambers communicate with opposing ends of a gas cylinder via first and second conduits disposed adjacent said fixed seal in said first and second sub-chambers, respectively, said gas cylinder being provided with a gas chamber separated from said first and second conduits by axially displaceable dividing pistons.

27. The shock absorber of claim 22 further comprising first and second coil springs, said first coil spring being associated with said first piston rod and having a first end axially fixed with respect to said cylinder and a second end axially fixed with respect to said first piston rod, said second coil spring being associated with said second piston rod and having a first end axially fixed with respect to said cylinder and a second end axially fixed with respect to said second piston rod.

28. The shock absorber of claim 27 wherein said first and second coil spring first ends are axially fixed with respect to said cylinder by means of an annular end plate fixed to said cylinder.

29. The shock absorber of claim 22 further comprising a first sleeve telescopically disposed about and sealingly engaging said cylinder and extending from said cylinder first end, a distal axial end of said first sleeve being sealed such that said first sleeve defines a sealed first sleeve cavity, said first piston rod being fixed in relation to said first sleeve.

30. The shock absorber of claim 29 wherein said first sleeve is provided with a valve means for adjusting gas pressure within said first sleeve cavity.

31. The shock absorber of claim 29 wherein a first annular cavity is defined in an overlap region between said cylinder and said first sleeve, opposing axial ends of said annular cavity being respectively defined by a first seal means fixed to said cylinder and sealingly engaging said first sleeve and a second seal means fixed to said first sleeve and sealingly engaging said cylinder.

32. The shock absorber of claim 31 wherein said first annular cavity communicates with said first piston sub-chamber, a cross sectional area of said first annular cavity measured in a plane perpendicular to a longitudinal axis of said first piston rod being substantially equal to a cross sectional area of said first piston rod.

33. The shock absorber of claim 31 wherein said first annular cavity is provided with a valve means for adjusting gas pressure therein.

34. The shock absorber of claim 29 further comprising a second sleeve telescopically disposed about and sealingly engaging said cylinder and extending from said cylinder second end, a distal axial end of said second sleeve being sealed such that

said second sleeve defines a sealed second sleeve cavity, said second piston rod being fixed in relation to said second sleeve.

35. The shock absorber of claim 34 wherein said second sleeve is provided with a valve means for adjusting gas pressure within said second sleeve cavity.

36. The shock absorber of claim 35 wherein a second annular cavity is defined in an overlap region between said cylinder and said second sleeve, opposing axial ends of said annular cavity being respectively defined by a first seal means fixed to said cylinder and sealingly engaging said second sleeve and a second seal means fixed to said second sleeve and sealingly engaging said cylinder.

37. The shock absorber of claim 36 wherein said second sealed annular cavity communicates with said second piston sub-chamber, a cross sectional area of said first sealed annular cavity measured in a plane perpendicular to a longitudinal axis of said second piston rod being substantially equal to a cross sectional area of said second piston rod.

38. The shock absorber of claim 36 wherein said second sealed annular cavity is provided with a valve means for adjusting gas pressure therein.

39. In combination, a first shock absorber according to claim 31 and a second shock absorber according to claim 31 wherein said first annular cavity of said first shock absorber is filled with liquid and is operatively associated with said first sleeve cavity of said second shock absorber such that a decrease/increase in the volume of said first annular cavity of said first shock absorber provides an increase/decrease in gas pressure in said first sleeve cavity of said second shock absorber.

40. The combination of claim 39 wherein said first annular cavity of said first shock absorber communicates with a first end of a control cylinder and said first sleeve cavity of said second shock absorber communicates with a second end of said control cylinder, a control cylinder dividing piston being disposed within said control cylinder isolating said first annular cavity of said first shock absorber and said first sleeve cavity of said second shock absorber.

41. The combination of claim 40 wherein said control cylinder dividing piston is provided with a piston rod sealingly received in a reduced cross section portion of said

control cylinder toward said control cylinder first end such that an extending end of said piston rod isolates said first annular cavity of said first shock absorber.

42. The combination of claim 39 wherein the first annular cavity of said second shock absorber is filled with liquid and is operatively associated with said first sleeve cavity of said first shock absorber such that a decrease/increase in the volume of said first annular cavity of said second shock absorber provides an increase/decrease in gas pressure in said first sleeve cavity of said first shock absorber.

43. A shock absorber comprising:

a cylinder having a liquid filled piston chamber.

an axially displaceable piston received in said piston chamber.

means for dampening axial displacement of said piston through said liquid in said piston chamber,

a piston rod connected to said piston and extending through a first end of said cylinder.

a sleeve telescopically disposed about and sealingly engaging said cylinder and extending from said cylinder first end, a distal axial end of said sleeve being sealed such that said sleeve defines a sealed sleeve cavity. said piston rod being fixed in relation to said sleeve, and.

means for securing one of said sleeve and said cylinder to a body of a vehicle and the other of said sleeve and said cylinder to a wheel suspension of a vehicle.

44. The shock absorber of claim 43 wherein said sleeve is provided with a valve means for adjusting gas pressure within said sleeve cavity.

45. The shock absorber of claim 43 wherein an annular cavity is defined in an overlap region between said cylinder and said sleeve. opposing axial ends of said annular cavity being respectively defined by a first seal means fixed to said cylinder and sealingly engaging said sleeve and a second seal means fixed to said sleeve and sealingly engaging said cylinder.

46. The shock absorber of claim 45 wherein said annular cavity communicates with said piston chamber. a cross sectional area of said annular cavity measured in a plane

perpendicular to a longitudinal axis of said piston rod being substantially equal to a cross sectional area of said piston rod.

47. The shock absorber of claim 45 wherein said annular cavity is provided with a valve means for adjusting gas pressure therein.

48. In combination, a first shock absorber according to claim 45 and a second shock absorber according to claim 45 wherein said annular cavity of said first shock absorber is filled with liquid and is operatively associated with said sleeve cavity of said second shock absorber such that a decrease/increase in the volume of said annular cavity of said first shock absorber provides an increase/decrease in gas pressure in said sleeve cavity of said second shock absorber.

49. The combination of claim 48 wherein said annular cavity of aid first shock absorber communicates with a first end of a control cylinder and said sleeve cavity of said second shock absorber communicates with a second end of said control cylinder, a control cylinder dividing piston being disposed within said control cylinder isolating said annular cavity of said first shock absorber and said sleeve cavity of said second shock absorber.

50. The combination of claim 49 wherein said control cylinder dividing piston is provided with a piston rod sealingly received in a reduced cross section portion of said control cylinder toward said control cylinder first end such that an extending end of said piston rod isolates said annular cavity of said first shock absorber.

51. The combination of claim 48 wherein said annular cavity of said second shock absorber is filled with liquid and is operatively associated with said sleeve cavity of said first shock absorber such that a decrease/increase in the volume of said annular cavity of said second shock absorber provides an increase/decrease in gas pressure in said sleeve cavity of said first shock absorber.

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